EXHIBIT 17

IN THE UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS WACO DIVISION

WSOU INVESTMENTS, LLC D/B/A § § Case No. 6:20-cv-00956-ADA BRAZOS LICENSING AND §

DEVELOPMENT, § JURY TRIAL DEMANDED § § § § §

ONEPLUS TECHNOLOGY (SHENZHEN) CO., LTD., Defendant.

v.

PLAINTIFF'S <u>AMENDED FINAL</u> DISCLOSURES OF <u>PRELIMINARY INFRINGEMENT CONTENTIONS</u>

Pursuant to the Court's Order Governing Proceeding – Patent Case ("Order Governing Proceeding"), Plaintiff WSOU Investments, LLC d/b/a Brazos Licensing and Development ("WSOU") hereby provides its <u>Amended Final</u> Initial Infringements Contentions to defendant OnePlus Technology (Shenzhen) Co., Ltd. ("OnePlus" or "Defendant") for U.S. Patent No. 7,477,876 (the "'876 Patent").

WSOU makes this disclosure based on the information presently available to it. Discovery in this case has not started, and WSOU reserves its right to amend or supplement these disclosures as permitted by the Federal Rules of Civil Procedure, by the local rules of the Western District of Texas, and by order of the Court, including the Court's Order Governing Proceedings.

For each Asserted Claim, Plaintiff identifies the following Accused Instrumentalities of which it is currently aware. The identification of Accused Instrumentalities is based on Plaintiff's research and analysis to date, without the benefit of discovery from the Defendant.

Plaintiff reserves the right to add, delete, substitute or otherwise amend this list of Accused Instrumentalities based on discovery or other circumstances, in a manner consistent with the Federal Rules of Civil Procedures, local rules, and standing orders.

The Accused Instrumentalities include, without limitation, the following:

- OnePlus 8 Series Phones (i.e., OnePlus 8 Pro and OnePlus 8) implementing 5G capabilities.
- All past, current and future OnePlus products and services that operate in the same or substantially similar manner as the specifically identified products and services above and described in Exhibit 1.
- All past, current and future OnePlus products and services that have the same or substantially similar features as the specifically identified products and services above and described in Exhibit 1.

Plaintiff's infringement contentions apply to the Accused Instrumentalities as well as all other past, current and future hardware and software products and services developed, made, used, offered for sale, sold, imported, and provided by OnePlus that contain or makes use of the Patented Technology.¹

Based upon currently available information, WSOU asserts that OnePlus has infringed and/or continues to infringe the patent and claims identified in the attached claim charts (the "Asserted Claims" of the "Patent-in-Suit"). Infringement claim charts evidencing the correspondence between (i) the elements of the Asserted Claims, and (ii) the corresponding items of the accused products are attached hereto. Further, Exhibit 1, which is attached hereto

¹ "Patented Technology" means all technologies described in the claims of the Patent-in-Suit.

and incorporated by reference, is an exemplary infringement claim chart identifying specifically where each limitation of each Asserted Claim is found within each Accused Instrumentality or practiced by each Accused Instrumentality.

Plaintiff asserts that Defendant has directly infringed and continues to directly infringe the Asserted Claims literally through the Accused Instrumentalities by making, using, offering for sale, and/or selling, or importing into the United States the Accused Instrumentalities. To the extent that Defendant alleges that one or more limitations of the Asserted Claims are not literally found in the Accused Instrumentalities, Plaintiff alleges that such limitations are found in or practiced by the Accused Instrumentalities under the doctrine of equivalents. Any differences alleged to exist between any of the Asserted Claims and any of the Accused Instrumentalities are insubstantial and that each Accused Instrumentality also meets each limitation under the doctrine of equivalents as the identified features of the Accused Instrumentality performs substantially the same function in substantially the same way to achieve substantially the same result as the corresponding claim limitation. WSOU reserves the right to assert infringement solely under the doctrine of equivalents with respect to any particular claim element(s), if warranted by discovery, further analysis, and/or claim constructions in this case.

Accused product	Evidence	
<u>OnePlus 8</u>	Operating System: OxygenOS based on Android™ 10 CPU: Qualcomm® Snapdragon™865 SG Chipset: X55 GPU: Adreno 650 RAM: 8GB/12GB LPDDR4X Storage: 128GB/256GB UFS 3.0 2-LANE Battery: 4300 mAh (non-removable) Warp Charge 30T Fast Charging (5V/6A) Source: https://www.oneplus.com/8/specs?from=8	
	Source: https://www.onepius.com/o/spees.irom-o	

OnePlus 8 Pro		
	Operating System: OxygenOS based on Android™ 10 CPU: Qualcomm® Snapdragon™ 865 5G Chipset: X55 GPU: Adreno 650 RAM: 8GB/12GB LPDDR5 Storage: 128GB/256GB UFS 3.0 2-LANE Battery: 4510 mAh (non-removable) Warp Charge 30T Fast Charging (5V/6A) 30W Wireless Charging	Sualcomm snapdragon
	https://www.oneplus.com/8-pro/sp	oecs?from=8pro

Plaintiff further asserts that Defendant has indirectly infringed and continues to indirectly infringe by actively inducing infringement of one or more of the claims of the Asserted Patent through the Accused Instrumentalities. Plaintiff also asserts that these third-parties directly infringe at least one or more of the claims of the Asserted Patent through the manufacture, use, sale, offer to sell, or importation of the Accused Instrumentalities.

For example, Defendant has actively induced infringement by encouraging the use of the Accused Instrumentalities in ways that infringe each Asserted Claim, including, but not limited through providing instructions to its customers and partners to encourage and instruct the user or partner to utilize the accused product in an infringing manner. Defendant knew or should have known that such encouragement would induce infringement. Defendant has taken active steps with the specific intent to encourage and cause others to use each Accused Instrumentality in ways that infringe each Asserted Claim. Such active steps by Defendant with specific intent to induce infringement have included, among other things, advertising, promoting, marketing, making available for use, offering to sell, and/or selling the Accused Instrumentalities to others; encouraging and influencing others to import, offer to sell, and/or sell the Accused Instrumentalities; directing and instructing others to use the Accused Instrumentalities in infringing ways; and by providing the Accused Instrumentalities to others. OnePlus has performed the aforementioned active steps with the knowledge of the Asserted Patent at least as

of the date

when the complaint in this case was filed. OnePlus has known or should have known that the acts it has induced constitute infringement because, for instance, it has been aware that end users

and resellers will purchase the Accused Instrumentalities will use them, resulting in direct infringement.

Further, for instance, the Accused Instrumentalities are known by Defendant to be especially made or especially adapted for use to infringe the Asserted Patent, and are not staple articles or commodity of commerce suitable for substantial non-infringing uses. Defendant contributes to the infringement of the Asserted Patent by making available for use, offering for sale, selling, and/or importing the Accused Instrumentalities to third parties, who use the Accused Instrumentalities and/or practice one or more claims of the Asserted Patent. Moreover, Defendant has had notice of the Asserted Patent at least as of the filing of the Complaint in this case.

These Infringement Contentions, including Exhibit 1, are based upon publicly-available information, and Plaintiff's research and analysis to date. The Accused Instrumentalities involve confidential, proprietary designs that are not publicly available, and Defendant has not yet provided discovery. Discovery is ongoing, and Plaintiff anticipates that the subject matter of these infringement contentions will be the subject of expert discovery. Discovery will provide evidence of Defendant's infringement, may lead to the discovery of additional instances of infringement, and may also enable identification of additional claims that are infringed by Defendant. Plaintiff reserves the right to add, delete, substitute, or otherwise further amend these Infringement Contentions based on discovery or other circumstances, in a manner consistent with the Federal Rules of Civil Procedures, local rules, and standing orders. Plaintiff explicitly

reserves the right to further modify and/or supplement these contentions with additional or

different theories and/or additional or different evidence. Further, WSOU reserves the right to

supplement or revise its

infringement contentions and/or chart, including identification of additional asserted claims,

based on, for example, new versions or variations of one or more of the Accused

Instrumentalities that are later discovered.

PRIORITY DATE

Each of the Asserted Claims of the '876 Patent is entitled to a priority date of no later

than November 2, 2001. The subject matter described by the Asserted Claims, however, may

have been conceived and reduced to practice prior to this priority date. WSOU also reserves the

right to [identify]update its contentions with evidence of an earlier conception and reduction

to practice through discovery including identifying any portions of the file history as

containing evidence of conception and reduction to practice. Plaintiff's research and analysis is

ongoing and Plaintiff reserves the right to assert that the claims are entitled to a priority date that

is earlier than the above date.

Dated: [May 18] October 26, 2021

RESPECTFULLY SUBMITTED,

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Attorneys for Plaintiff WSOU INVESTMENTS, LLC d/b/a BRAZOS LICENSING AND DEVELOPMENT

CERTIFICATE OF SERVICE

A true and correct copy of the foregoing instrument was served or delivered electronically

to all counsel of record, on this [18]26th day of [May]October, 2021.

/s/ Jonathan K. Waldrop
Jonathan K. Waldrop

Exhibit 1 to WSOU Investments, LLC's Amended Preliminary Infringement Contentions

Infringement Claim Chart of U.S. Patent No. 7,477,876 (the "Asserted Patent")

The Accused Instrumentalities include, without limitation, OnePlus Technology (Shenzhen) Co., Ltd. ("OnePlus" or "Defendant"); OnePlus 8 Series Phones (i.e., OnePlus 8 Pro and OnePlus 8) implementing 5G capabilities; all past, current and future OnePlus products and services that operate in the same or substantially similar manner as the specifically identified products and services; and all past, current and future OnePlus products and services that have the same or substantially similar features as the specifically identified products and services.

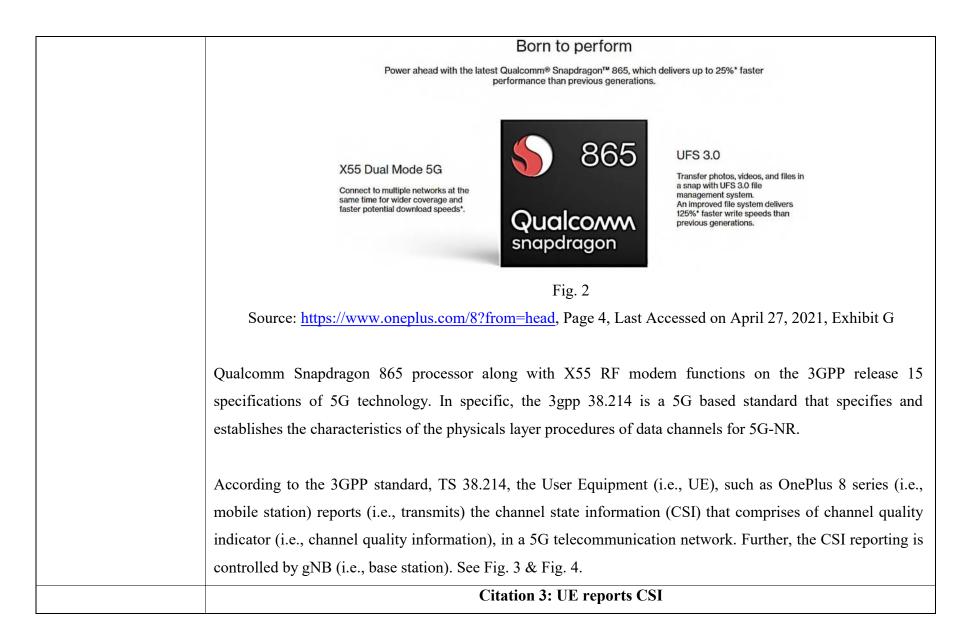
WSOU Investments, LLC ("WSOU" or "Plaintiff") contends that OnePlus, including OnePlus's employees, directly infringes each of the Asserted Claims, either literally or under the doctrine of equivalents. WSOU also contends that OnePlus has indirectly infringed and continues to indirectly infringe by contributing to and actively inducing infringement of one or more of the Asserted Claims.

WSOU does not intend this exemplary claim chart to be limiting, and WSOU reserves its rights to pursue other accused instrumentalities, patent claims, evidence, and infringement arguments in this case.

Exhibit(s)	Description	Link
Exhibit A	OnePlus 8 Pro Product Page https://www.oneplus.com/8-pro/specs	
Exhibit B	3GPP TS 38.214 version 15.2.0 Release	https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_13
	15	8214v150200p.pdf
Exhibit C	5G Terminology <u>https://www.5g-networks.net/uncategorized/5g-terminology-the-gnb/</u>	
Exhibit D	3GPP TS 38.321 version 15.2.0 Release <a 5g="" 5g_csi_report.htm"="" href="https://www.etsi.org/deliver/etsi_ts/138300_138399/138321/15.02.00_60/ts_138399/13839/13839/13839/1380/60/ts_</td></tr><tr><td></td><td>15</td><td>8321v150200p.pdf</td></tr><tr><td>Exhibit E</td><td colspan=2>Semi-persistent CSI Reporting https://www.sharetechnote.com/html/5G/5G_CSI_Report.htm	
Exhibit F	Bandwidth Part (BWP)	http://www.techplayon.com/5g-nr-bandwidth-part-bwp/
Exhibit G	Product Part(Full Description) https://www.oneplus.com/8?from=head	

Claims	OnePlus 8 and 8 Pro (The accused products)
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1Pre. A method for	The accused products practice a method for transmitting channel quality information in a wireless		
transmitting channel	communication system comprising at least one base station and at least one mobile station.		
quality information in a			
wireless	OnePlus 8 series mobile devices (i.e., OnePlus 8 Pro and OnePlus 8) are the latest releases of OnePlus that		
communication system	support 5G in their Mobiles.		
comprising at least one			
base station and at	OnePlus 8 series comprises of 5G supported Qualcomm Snapdragon 865 processor along with the Qualcomm		
least one mobile	Snapdragon X55 5G Modem-RF system for transmission of signals (i.e., Channel Quality Information), as		
station, the method	shown in Fig. 1 and Fig. 2.		
comprising:			
	Citation 1: OnePlus 8 Pro Specifications Performance Operating System: OxygenOS based on Android™ 10 CPU: Qualcomm® Snapdragon™ 865 5G Chipset: X65 GPU: Adreno 650 RAM: 8GB/126B LPDDR5 Storage: 128GB/256GB UFS 3.0 2-LANE Battery: 4510 mAh (non-removable) Warp Charge 30T Fast Charging (5V/6A) 30W Wireless Charging Fig. 1 Source: https://www.oneplus.com/8-pro/specs, Page 1 and 2, Last Accessed on April 27, 2021, Exhibit A		
	Citation 2: OnePlus 8 Specifications		



	5.2	UE procedure for reporting channel state information (CSI)	
	5.2.1	Channel state information framework	
	The time and frequency resources that can be used by the UE to report CSI are controlled by the gNB. CSI may consist of Channel Quality Indicator (CQI), precoding matrix indicator (PMI), CSI-RS resource indicator (CRI), SS/PBCH Block Resource indicator (SSBRI), layer indicator (LI), rank indicator (RI) and/or L1-RSRP.		
	Fig. 3		
	Source: https://ww	ww.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf	
		, Page 31, Last Accessed on April 27, 2021, Exhibit B	
		Citation 4: gNB is 5G terminology for base station	
		5G Terminology: The gNB	
		5G specifications are ongoing, so there are new acronyms to remember.	
		So after the BTS (Base Transceiver Station) in 2G, the NodeB in 3G, the eNB in 4G, here comes the gNB in 5G.	
		Fig. 4	
	Source:		

reception of a data	to gNB in a particular periodicity and time slots. See Fig. 5.
transmission at the	
mobile station,	Citation 5: UE configured with CSI Reporting & Resource Settings
	For CQI, PMI, CRI, SSBRI, LI, RI, L1-RSRP, a UE is configured by higher layers with N≥1 CSI-ReportConfig Reporting Settings, M≥1 CSI-ResourceConfig Resource Settings, and one or two list(s) of trigger states (given by the higher layer parameters aperiodicTriggerStateList and semiPersistentOnPUSCH-TriggerStateList). Each trigger state in aperiodicTriggerStateList contains a list of associated CSI-ReportConfigs indicating the Resource Set IDs for channel and optionally for interference. Each trigger state in semiPersistentOnPUSCH-TriggerStateList contains one associated CSI-ReportConfig.
	Fig. 5
	Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf
	, Page 32, Last Accessed on April 27, 2021, Exhibit B
	The Reporting Settings enables the UE to configure the periodicity and time slots to adjust (i.e., vary) the
	transmission rate of the CSI reporting to the gNB. The reporting timing can be set as aperiodic, periodic, Semi-
	persistent. Based on the configured Reporting Settings, the UE will adjust (i.e., vary) the pattern of the CSIs
	transmission to the gNB. See Fig. 6 and Fig. 7.
	Citation 6: Various CSI Reporting settings
	5.2.1.1 Reporting settings
	Each Reporting Setting CSI-ReportConfig is associated with a single downlink BWP (indicated by higher layer parameter bwp-Id) given in the associated CSI-ResourceConfig for channel measurement and contains the parameter(s) for one CSI reporting band:codebook configuration including codebook subset restriction, time-domain behavior, frequency granularity for CQI and PMI, measurement restriction configurations, and the CSI-related quantities to be reported by the UE such as the layer indicator (LI), L1-RSRP, CRI, and SSBRI (SSB Resource Indicator).
	The time domain behavior of the CSI-ReportConfig is indicated by the higher layer parameter reportConfigType and can be set to 'aperiodic', 'semiPersistentOnPUCCH', 'semiPersistentOnPUSCH', or 'periodic'. For periodic and semiPersistentOnPUCCH/semiPersistentOnPUSCH CSI reporting, the configured periodicity and slot offset applies in the numerology of the UL BWP in which the CSI report is configured to be transmitted on. The higher layer parameter
	Fig. 6

Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf

, Page 32, Last Accessed on April 27, 2021, Exhibit B

Citation 7: Resource settings

5.2.1.2 Resource settings

Each CSI Resource Setting CSI-ResourceConfig contains a configuration of S≥1 CSI Resource Sets (given by higher layer parameter csi-RS-ResourceSetList), with each CSI Resource Set consisting of CSI-RS resources (comprised of either NZP CSI-RS or CSI-IM) and SS/PBCH Block resources used for L1-RSRP computation. Each CSI Resource Setting is located in the DL BWP identified by the higher layer parameter bwp-id, and all CSI Resource Settings linked to a CSI Report Setting have the same DL BWP.

The time domain behavior of the CSI-RS resources within a CSI Resource Setting are indicated by the higher layer parameter resourceType and can be set to aperiodic, periodic, or semi-persistent. For periodic and semi-persistent CSI

Fig. 7

Source:https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf

, Page 32, Last Accessed on April 27, 2021, Exhibit B

One of the configured reporting settings is Semi-persistent CSI reporting. The semi-persistent CSI reporting is a combination of aperiodic and periodic reporting (i.e., Varying reporting rate). Further, the configured semi-persistent CSI reporting settings are triggered by BWP command or trigger (i.e., a function of the presence or absence of reception of data transmission). BWP stands for Bandwidth Part, which a contiguous set of physical resource blocks on a given carrier, and BWP has frequency and time as its attributes. See Fig. 6 to Fig. 10.

Citation 8: Semi-persistent CSI Reporting- Combination of Periodic and Aperiodic

CSI Report Sequence Flow

How these configuration works can be illustrated as below. Periodic and Aperiodic method would be obvious as shown below. Semi-Persistent can be regarded as a kind of mix of Periodic and Aperiodic. The first cycle would be similar to aperiodic, but once the cycle is triggered the CSI RS transmission and CSI Report would happen periodically.

Fig. 8

Case 6:20-cv-00952-ADA Document 62-19 Filed 11/24/21 Page 16 of 35

Source: https://www.sharetechnote.com/html/5G/5G_CSI_Report.html , Page 10, Last Accessed on April 27,
2021, Exhibit E

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Citation 9: About BWP

A **Bandwidth Part** (BWP) is a contiguous set of physical resource blocks (PRBs) on a given carrier. These RBs are selected from a contiguous subset of the common resource blocks for a given numerology (u). It is denoted by **BWP**. Each BWP defined for a numerology can have following three different parameters.

- · Subcarrier spacing
- · Symbol duration
- · Cyclic prefix (CP) length

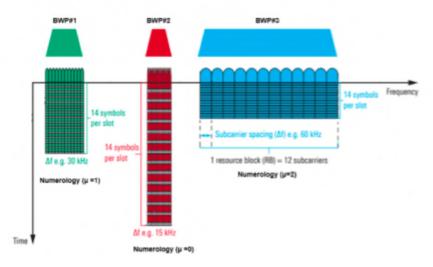


Fig. 9

Source: http://www.techplayon.com/5g-nr-bandwidth-part-bwp/, Page 1, Last Accessed on April 27, 2021, Exhibit F

	BWP Activation/Deactivation and Switching	
	According to 38.321-5.15 Bandwidth Part (BWP) operation, BWP selection (or BWP switching) can be done by several different ways as listed below.	
	 Dedicated RRC Signaling Over PDCCH channel Downlink control information (DCI)- DCI 0_1 (UL Grant) and DCI 1_0 (DL Scheduling) By bwp-inactivityTimer – ServingCellConfig.bwp-InactivityTimer By MAC CE (Control Element) 	
	Fig. 10	
	Source: http://www.techplayon.com/5g-nr-bandwidth-part-bwp/ , Page 1, Last Accessed on April 27, 2021,	
	Exhibit F	
1b. wherein the mobile	The accused products practice a method wherein the mobile station reports channel quality information at a	
station reports channel	first rate in the absence of a reception of a data transmission from the base station and, upon detection of a	
quality information at a	reception of a data transmission from the base station, the mobile station reports channel quality information at	
first rate in the absence	a second rate for a prescribed duration.	
of a reception of a data		
transmission from the	Fig. 11 to Fig. 14 shows that the UE can be configured with semi-persistent CSI reporting based on BWP	
base station and, upon	command or trigger. The UE configured with semi-persistent CSI reporting without any command or trigger	
detection of a reception	from the network (i.e., absence of reception of data transmission from the base station), would be transmitting	
of a data transmission	CSI report in an aperiodic manner (i.e., first rate). Once the BWP command or trigger is received from the	
from the base station,	network (i.e., upon detection of reception of data transmission from the base station), the UE transmits in a	
the mobile station	periodic manner (i.e., second rate) for a particular duration (i.e., prescribed duration).	
reports channel quality		
information at a second	Citation 11: CSI Reporting settings	
rate for a prescribed		

5.2.1.1 Reporting settings		
Each Reporting Setting CSI-ReportConfig is associated with a single downlink BWP (indicated by higher layer parameter bwp-Id) given in the associated CSI-ResourceConfig for channel measurement and contains the parameter(s) for one CSI reporting band:codebook configuration including codebook subset restriction, time-domain behavior, frequency granularity for CQI and PMI, measurement restriction configurations, and the CSI-related quantities to be reported by the UE such as the layer indicator (LI), L1-RSRP, CRI, and SSBRI (SSB Resource Indicator).		
The time domain behavior of the CSI-ReportConfig is indicated by the higher layer parameter reportConfigType and can be set to 'aperiodic', 'semiPersistentOnPUCCH', 'semiPersistentOnPUSCH', or 'periodic'. For periodic and semiPersistentOnPUCCH/semiPersistentOnPUSCH CSI reporting, the configured periodicity and slot offset applies in the numerology of the UL BWP in which the CSI report is configured to be transmitted on. The higher layer parameter Fig. 11		
, Page 32, Last Accessed on April 27, 2021, Exhibit B		
Citation 12: Resource settings		
5.2.1.2 Resource settings		
Each CSI Resource Setting CSI-ResourceConfig contains a configuration of S≥1 CSI Resource Sets (given by higher layer parameter csi-RS-ResourceSetList), with each CSI Resource Set consisting of CSI-RS resources (comprised of either NZP CSI-RS or CSI-IM) and SS/PBCH Block resources used for L1-RSRP computation. Each CSI Resource Setting is located in the DL BWP identified by the higher layer parameter bwp-id, and all CSI Resource Settings linked to a CSI Report Setting have the same DL BWP.		
The time domain behavior of the CSI-RS resources within a CSI Resource Setting are indicated by the higher layer parameter resourceType and can be set to aperiodic, periodic, or semi-persistent. For periodic and semi-persistent CSI Fig. 12		
, Page 32, Last Accessed on April 27, 2021, Exhibit B		
Citation 13: Semi-persistent CSI Reporting - First Rate and Second Rate		

CSI Report Sequence Flow

How these configuration works can be illustrated as below. Periodic and Aperiodic method would be obvious as shown below. Semi-Persistent can be regarded as a kind of mix of Periodic and Aperiodic. The first cycle would be similar to aperiodic, but once the cycle is triggered the CSI RS transmission and CSI Report would happen periodically.

Fig. 13

Source: https://www.sharetechnote.com/html/5G/5G CSI_Report.html, Page 10, Last Accessed on April 27, 2021, Exhibit E

Citation 14: Semi-persistent CSI reporting - command/trigger

Table 5.2.1.4-1: Triggering/Activation of CSI Reporting for the possible CSI-RS Configurations.

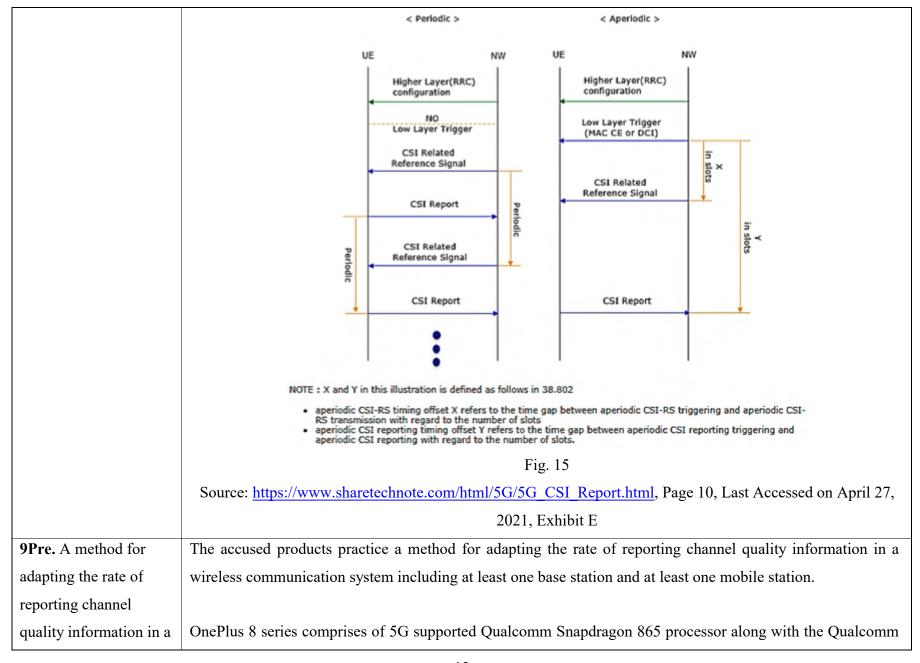
CSI-RS Configuration	Periodic CSI Reporting	Semi-Persistent CSI Reporting	Aperiodic CSI Reporting
Periodic CSI-RS	No dynamic triggering/activation	For reporting on PUCCH, the UE receives an activation command [10, TS 38.321]; for reporting on PUSCH, the UE receives triggering on DCI	Triggered by DCI; additionally, activation command [10, TS 38.321] possible as defined in Subclause 5.2.1.5.1.
Semi-Persistent CSI-RS	Not Supported	For reporting on PUCCH, the UE receives an activation command [10, TS 38.321]; for reporting on PUSCH, the UE receives triggering on DCI	Triggered by DCI; additionally, activation command [10, TS 38.321] possible as defined in Subclause 5.2.1.5.1.
Aperiodic CSI-RS	Not Supported	Not Supported	Triggered by DCI; additionally, activation command [10, TS 38.321] possible as defined in Subclause 5.2.1.5.1.

Fig. 14

Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf,

Page 33, Last Accessed on April 27, 2021, Exhibit B

4. The method	The accused products practice a method wherein the second rate is faster than the first rate.
according to claim	
1, wherein the	The UE configured with semi-persistent CSI reporting without any command or trigger from the network
second rate is	would be transmitting CSI report in an aperiodic manner (i.e., first rate). Once the BWP command or trigger is
faster than the	received from the network, it starts transmitting in a periodic manner (i.e., second rate) for a particular
first rate.	duration.
	As an example, the time taken by UE to transmit the CSI report in a periodic manner is less as compared to aperiodic CSI reporting. As the time taken in case of periodic CSI reporting is lesser than aperiodic CSI reporting, it implies that the rate of periodic CSI reporting (i.e., second rate) is faster than aperiodic CSI reporting rate (i.e., first rate). See Fig. 15.
	Citation 15: CSI Reporting rate in periodic and aperiodic manner



wireless	Snapdragon X55 5G Modem-	-RF system for transmission of signals	(i.e., Channel Quality Information), as		
communication system	shown in Fig. 16 and Fig. 17.				
including at least one					
base station and at					
least one mobile		Citation 16: OnePlus 8 Pro Specifi	cations		
station, the method comprising:	Performance	Operating System: OxygenOS based on Android™ 10 CPU: Qualcomm® Snapdragon™ 865 5G Chipset: X55 GPU: Adreno 650 RAM: 8GB/12GB LPDDR5 Storage: 128GB/256GB UFS 3.0 2-LANE Battery: 4510 mAh (non-removable) Warp Charge 30T Fast Charging (5V/6A) 30W Wireless Charging	Qualconn snapdragon		
	Source, https://www.openh	Fig. 16	Aggested on April 27, 2021 Exhibit A		
	Source: https://www.oneplus.com/8-pro/specs , Page 1 and 2, Last Accessed on April 27, 2021, Exhibit A Citation 17: OnePlus 8 Specifications				
		Born to perform			
	Powe	r ahead with the latest Qualcomm® Snapdragon™ 865, which d performance than previous generations.	elivers up to 25%* faster		
	X55 Dual Mc Connect to multiple same time for wide faster potential dow	e networks at the er coverage and	UFS 3.0 Transfer photos, videos, and files in a snap with UFS 3.0 file management system. An improved file system delivers 125%* faster write speeds than previous generations.		
		Fig. 17			

Source: https://www.oneplus.com/8?from=head, Page 4, Last Accessed on April 27, 2021, Exhibit G

Qualcomm Snapdragon 865 processor along with X55 RF modem functions on the 3GPP release 15 specifications of 5G technology. In specific, the 3gpp 38.214 is a 5G based standard that specifies and establishes the characteristics of the physicals layer procedures of data channels for 5G-NR.

According to the 3GPP standard, TS 38.214, the User Equipment (i.e., UE), such as OnePlus 8 series (i.e., mobile station) reports (i.e., transmits) the channel state information (CSI) that comprises of channel quality indicator (i.e., channel quality information), in a 5G telecommunication network. Further, the CSI reporting is controlled by gNB (i.e., base station). See Fig. 18 and Fig. 19.

Citation 18: UE reports CSI

5.2 UE procedure for reporting channel state information (CSI)

5.2.1 Channel state information framework

The time and frequency resources that can be used by the UE to report CSI are controlled by the gNB. CSI may consist of Channel Quality Indicator (CQI), precoding matrix indicator (PMI), CSI-RS resource indicator (CRI), SS/PBCH Block Resource indicator (SSBRI), layer indicator (LI), rank indicator (RI) and/or L1-RSRP.

Fig. 18

Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf

, Page 31, Last Accessed on April 27, 2021, Exhibit B

Citation 19: gNB is 5G terminology for base station

5G Terminology: The gNB

5G specifications are ongoing, so there are new acronyms to remember.

So after the BTS (Base Transceiver Station) in 2G, the NodeB in 3G, the eNB in 4G, here comes the gNB in 5G.

Fig. 19

Source: https://www.5g-networks.net/uncategorized/5g-terminology-the-gnb/, Page 1, Last Accessed on April 27, 2021, Exhibit C

One Plus 8 Pro supports 5G based standards such as 3gpp 38.214.

The UE (e.g., One Plus 8 Pro) is configured with CSI-ReportConfig reporting settings to report CSI (i.e., CQI) to gNB in a particular periodicity and time slots. See Fig. 20.

Citation 20: UE configured with CSI Reporting & Resource Settings

For CQI, PMI, CRI, SSBRI, LI, RI, L1-RSRP, a UE is configured by higher layers with N≥1 CSI-ReportConfig Reporting Settings, M≥1 CSI-ResourceConfig Resource Settings, and one or two list(s) of trigger states (given by the higher layer parameters aperiodicTriggerStateList and semiPersistentOnPUSCH-TriggerStateList). Each trigger state in aperiodicTriggerStateList contains a list of associated CSI-ReportConfigs indicating the Resource Set IDs for channel and optionally for interference. Each trigger state in semiPersistentOnPUSCH-TriggerStateList contains one associated CSI-ReportConfig.

Fig. 20

Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf,

Page 32, Last Accessed on April 27, 2021, Exhibit B

The Reporting Settings enables the UE to configure the periodicity and time slots to adjust (i.e., vary) the transmission rate of the CSI reporting to the gNB. The reporting timing can be set as aperiodic, periodic, *Semi-persistent*. Based on the configured Reporting Settings, the UE will adjust (i.e., vary) the pattern of the CSIs

	transmission to the gNB. See Fig. 21 and Fig. 22.
	Citation 21: Various CSI Reporting settings
	5.2.1.1 Reporting settings
	Each Reporting Setting CSI-ReportConfig is associated with a single downlink BWP (indicated by higher layer parameter bwp-Id) given in the associated CSI-ResourceConfig for channel measurement and contains the parameter(s) for one CSI reporting band:codebook configuration including codebook subset restriction, time-domain behavior, frequency granularity for CQI and PMI, measurement restriction configurations, and the CSI-related quantities to be reported by the UE such as the layer indicator (LI), L1-RSRP, CRI, and SSBRI (SSB Resource Indicator).
	The time domain behavior of the CSI-ReportConfig is indicated by the higher layer parameter reportConfigType and can be set to 'aperiodic', 'semiPersistentOnPUCCH', 'semiPersistentOnPUSCH', or 'periodic'. For periodic and semiPersistentOnPUCCH/semiPersistentOnPUSCH CSI reporting, the configured periodicity and slot offset applies in the numerology of the UL BWP in which the CSI report is configured to be transmitted on. The higher layer parameter
	Fig. 21
	Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf
	, Page 32, Last Accessed on April 27, 2021, Exhibit B
	Citation 22: Resource settings
	5.2.1.2 Resource settings
	Each CSI Resource Setting CSI-ResourceConfig contains a configuration of S≥1 CSI Resource Sets (given by higher layer parameter csi-RS-ResourceSetList), with each CSI Resource Set consisting of CSI-RS resources (comprised of either NZP CSI-RS or CSI-IM) and SS/PBCH Block resources used for L1-RSRP computation. Each CSI Resource Setting is located in the DL BWP identified by the higher layer parameter bwp-id, and all CSI Resource Settings linked to a CSI Report Setting have the same DL BWP.
	The time domain behavior of the CSI-RS resources within a CSI Resource Setting are indicated by the higher layer parameter resourceType and can be set to aperiodic, periodic, or semi-persistent. For periodic and semi-persistent CSI
	Fig. 22
	Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf
	, Page 32, Last Accessed on April 27, 2021, Exhibit B
Qa reporting channel	The accused product practices a method comprising reporting channel quality information from the at least on
9a. reporting channel	The accused product practices a method comprising reporting channel quality information from the at least or

quality information	mobile station to the at least one base station at a first rate in the absence of a reception of a data transmission		
from the at least one	at the at least one mobile station.		
mobile station to the at			
least one base station	One of the configured reporting settings is Semi-persistent CSI reporting. The semi-persistent CSI reporting is		
at a first rate in the	a combination of aperiodic and periodic reporting (i.e., Varying reporting rate). Further, the configured semi-		
absence of a reception	persistent CSI reporting settings are triggered by BWP command or trigger (i.e., a function of the presence or		
of a data transmission	absence of reception of data transmission). BWP stands for Bandwidth Part, which a contiguous set of physical		
at the at least one	resource blocks on a given carrier, and BWP has frequency and time as its attributes. See Fig. 23 to Fig. 27.		
mobile station; and	Citation 23: Various CSI Reporting settings		
	5.2.1.1 Reporting settings		
	Each Reporting Setting CSI-ReportConfig is associated with a single downlink BWP (indicated by higher layer parameter bwp-Id) given in the associated CSI-ResourceConfig for channel measurement and contains the parameter(s) for one CSI reporting band:codebook configuration including codebook subset restriction, time-domain behavior, frequency granularity for CQI and PMI, measurement restriction configurations, and the CSI-related quantities to be reported by the UE such as the layer indicator (LI), L1-RSRP, CRI, and SSBRI (SSB Resource Indicator).		
	The time domain behavior of the CSI-ReportConfig is indicated by the higher layer parameter reportConfigType and can be set to 'aperiodic', 'semiPersistentOnPUCCH', 'semiPersistentOnPUSCH', or 'periodic'. For periodic and semiPersistentOnPUCCH/semiPersistentOnPUSCH CSI reporting, the configured periodicity and slot offset applies in the numerology of the UL BWP in which the CSI report is configured to be transmitted on. The higher layer parameter		
	Fig. 23		
	Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf		
	, Page 32, Last Accessed on April 27, 2021, Exhibit B		
	Citation 24: Resource settings		

5.2.1.2 Resource settings

Each CSI Resource Setting CSI-ResourceConfig contains a configuration of S≥1 CSI Resource Sets (given by higher layer parameter csi-RS-ResourceSetList), with each CSI Resource Set consisting of CSI-RS resources (comprised of either NZP CSI-RS or CSI-IM) and SS/PBCH Block resources used for L1-RSRP computation. Each CSI Resource Setting is located in the DL BWP identified by the higher layer parameter bwp-id, and all CSI Resource Settings linked to a CSI Report Setting have the same DL BWP.

The time domain behavior of the CSI-RS resources within a CSI Resource Setting are indicated by the higher layer parameter resourceType and can be set to aperiodic, periodic, or semi-persistent. For periodic and semi-persistent CSI

Fig. 24

Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf

, Page 32, Last Accessed on April 27, 2021, Exhibit B

Citation 25: Semi-persistent CSI Reporting- Combination of Periodic and Aperiodic

CSI Report Sequence Flow

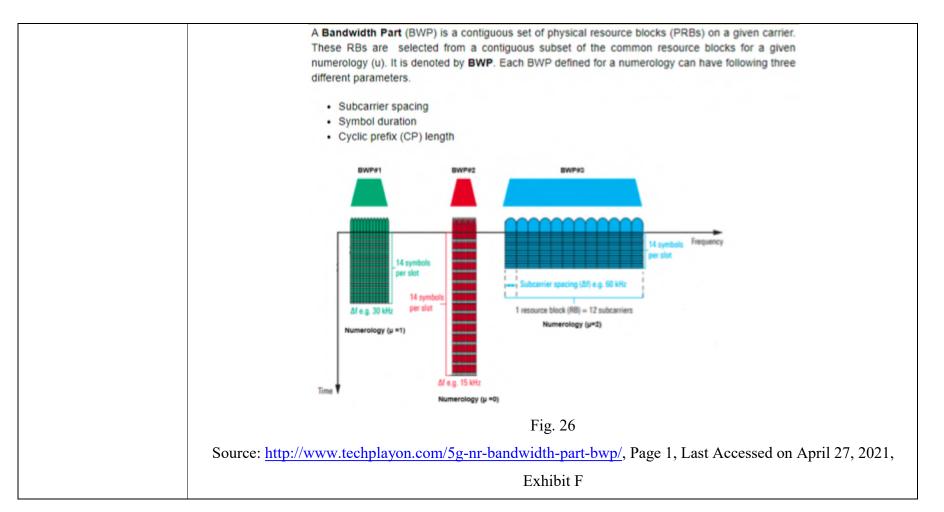
How these configuration works can be illustrated as below. Periodic and Aperiodic method would be obvious as shown below. Semi-Persistent can be regarded as a kind of mix of Periodic and Aperiodic. The first cycle would be similar to aperiodic, but once the cycle is triggered the CSI RS transmission and CSI Report would happen periodically.

Fig. 25

Source: https://www.sharetechnote.com/html/5G/5G_CSI_Report.html, Page 10, Last Accessed on April 27,

2021, Exhibit E

Citation 26: About BWP



Citation 27: BWP Activation/Deactivation

transmits in a periodic manner (i.e., second rate) for a particular duration.
from the network (i.e., upon detection of reception of data transmission from the base station), the UE
transmitting CSI report in an aperiodic manner (i.e., first rate). Once the BWP command or trigger is received
trigger from the network (i.e., absence of reception of data transmission from the base station), would be
on BWP command or trigger. The UE configured with semi-persistent CSI reporting without any command or
As shown in Fig. 23, Fig. 25, and Fig. 28, the UE can be configured with semi-persistent CSI reporting based
Exhibit F
Source: http://www.techplayon.com/5g-nr-bandwidth-part-bwp/ , Page 1, Last Accessed on April 27, 2021,
Fig. 27
 Dedicated RRC Signaling Over PDCCH channel Downlink control information (DCI)- DCI 0_1 (UL Grant) and DCI 1_0 (DL Scheduling) By bwp-inactivityTimer – ServingCellConfig.bwp-InactivityTimer By MAC CE (Control Element)
According to 38.321-5.15 Bandwidth Part (BWP) operation, BWP selection (or BWP switching) can be done by several different ways as listed below.
BWP Activation/Deactivation and Switching

	Table 5.	2.1.4-1: Trigg	ering/Activation of CSI Re	porting for the possible C	CSI-RS Configurations.	
	CSI-RS Configuration		n Periodic CSI Reporting Semi-Persistent CS Reporting		Aperiodic CSI Reporting	
	Periodic CSI	I-RS	No dynamic triggering/activation	For reporting on PUCCH, the UE receives an activation command [10, TS 38.321]; for reporting on PUSCH, the UE receives triggering on DCI	Triggered by DCI; additionally, activation command [10, TS 38.321] possible as defined in Subclause 5.2.1.5.1.	
	Semi-Persist		Not Supported	For reporting on PUCCH, the UE receives an activation command [10, TS 38.321]; for reporting on PUSCH, the UE receives triggering on DCI	Triggered by DCI; additionally, activation command [10, TS 38.321] possible as defined in Subclause 5.2.1.5.1.	
	Aperiodic CS	SI-RS	Not Supported	Not Supported	Triggered by DCI; additionally, activation command [10, TS 38.321] possible as defined in Subclause 5.2.1.5.1.	
	Fig. 28					
	Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf				50200p.pdf	
	, Page 33, Last Accessed on April 27, 2021, Exhibit B					
9b. in the presence of a	The accused products practice a method comprising in the presence of a reception of a data transmission at the			nission at the		
reception of a data	at least one mobile station, adapting the rate for reporting channel quality information from the at least one			e at least one		
transmission at the at	mobile station to the at least one base station from the first rate to a second rate for a prescribed duration.					
least one mobile						
station, adapting the	Fig. 29 to Fig. 31 Error! Reference source not found.show that the UE can be configured with					
rate for reporting	semi-persistent CSI reporting based on BWP command or trigger. The UE configured with semi-persistent CSI					
channel quality	reporting without any command or trigger from the network (i.e., absence of reception of data transmission					
information from the at	from the base station), would be transmitting CSI report in an aperiodic manner (i.e., first rate). Once the BWP					
	command or trigger is					
least one mobile station	received from the netw	ork (i.e., up	pon detection of recep	otion of data transmis	sion from the base sta	tion), the UE
to the at least one base	transmits in a periodic manner (i.e., second rate) for a particular duration (i.e., prescribed duration).					

station from the first			
rate to a second rate for	Citation 29: Various CSI Reporting settings		
a prescribed duration.	5.2.1.1 Reporting settings		
	Each Reporting Setting CSI-ReportConfig is associated with a single downlink BWP (indicated by higher layer parameter bwp-Id) given in the associated CSI-ResourceConfig for channel measurement and contains the parameter(s) for one CSI reporting band:codebook configuration including codebook subset restriction, time-domain behavior, frequency granularity for CQI and PMI, measurement restriction configurations, and the CSI-related quantities to be reported by the UE such as the layer indicator (LI), L1-RSRP, CRI, and SSBRI (SSB Resource Indicator).		
	The time domain behavior of the CSI-ReportConfig is indicated by the higher layer parameter reportConfigType and can be set to 'aperiodic', 'semiPersistentOnPUCCH', 'semiPersistentOnPUSCH', or 'periodic'. For periodic and semiPersistentOnPUCCH/semiPersistentOnPUSCH CSI reporting, the configured periodicity and slot offset applies in the numerology of the UL BWP in which the CSI report is configured to be transmitted on. The higher layer parameter		
	Fig. 29		
	Source: https://www.etsi.org/deliver/etsi_ts/138200_138299/138214/15.02.00_60/ts_138214v150200p.pdf		
	, Page 32, Last Accessed on April 27, 2021, Exhibit B		
	Citation 30: Semi-persistent CSI Reporting - First Rate and Second Rate		
	CSI Report Sequence Flow		
	How these configuration works can be illustrated as below. Periodic and Aperiodic method would be obvious as shown below. Semi-Persistent can be regarded as a kind of mix of Periodic and Aperiodic. The first cycle would be similar to aperiodic, but once the cycle is triggered the CSI RS transmission and CSI Report would happen periodically.		
	Fig. 30		
	Source: https://www.sharetechnote.com/html/5G/5G_CSI_Report.html , Page 10, Last Accessed on April 27,		
	2021, Exhibit E		
	Citation 31: Semi-persistent CSI reporting - command/trigger		

	CSI-RS Configuration	Periodic CSI Reporting	Semi-Persistent CSI Reporting	Aperiodic CSI Reporting
	Periodic CSI-RS	No dynamic triggering/activation	For reporting on PUCCH, the UE receives an activation command [10, TS 38.321]; for reporting on PUSCH, the UE receives triggering on DCI	Triggered by DCI; additionally, activation command [10, TS 38.321] possible as defined in Subclause 5.2.1.5.1.
	Semi-Persistent CSI-RS	Not Supported	For reporting on PUCCH, the UE receives an activation command [10, TS 38.321]; for reporting on PUSCH, the UE receives triggering on DCI	Triggered by DCI; additionally, activation command [10, TS 38.321] possible as defined in Subclause 5.2.1.5.1.
	Aperiodic CSI-RS	Not Supported	Not Supported	Triggered by DCI; additionally, activation command [10, TS 38.321] possible as defined in Subclause 5.2.1.5.1.
	Source:https://www.etsi.org/d		g. 31 138299/138214/15.02	2.00 60/ts 138214v1
		ge 33, Last Accessed of	-	
10. The method	The accused products practice a	The accused products practice a method wherein the second rate is faster than the first rate.		
according to claim				
9, wherein the	Refer to supporting evidence of claim element 4.			
second rate is				
faster than the				
first rate.				

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